

SEQUENCE LISTING

<110> Lambeth, J. David

Cheng, Guangjie

McCoy, James

<120> Methods and Transgenic Mouse Model for Identifying and Modulating
Factors Involved in the Production of Reactive Oxygen Intermediates

<130> 05501-0211 (43150-286808)

<150> US 60/395,498

<151> 2002-07-12

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<170> PatentIn version 3.1

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Trp Tyr Glu Glu Glu Glu Ser Phe His Tyr Thr Arg Val Ile Leu Gly
 35 40 45

Ser Thr Leu Ala Trp Ala Arg Ala Ser Ala Leu Cys Leu Asn Phe Asn
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Cys Met Leu Ile Leu Ile Pro Val Ser Arg Asn Leu Ile Ser Phe Ile
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Arg Gly Thr Ser Ile Cys Cys Arg Gly Pro Trp Arg Arg Gln Leu Asp
 85 90 95

Lys Asn Leu Arg Phe His Lys Leu Val Ala Tyr Gly Ile Ala Val Asn
 100 105 110

Ala Thr Ile His Ile Val Ala His Phe Phe Asn Leu Glu Arg Tyr His
 115 120 125

Trp Ser Gln Ser Glu Glu Ala Gln Gly Leu Leu Ala Ala Leu Ser Lys
 130 135 140

Leu Gly Asn Thr Pro Asn Glu Ser Tyr Leu Asn Pro Val Arg Thr Phe
 145 150 155 160

Pro Thr Asn Thr Thr Thr Glu Leu Leu Arg Thr Ile Ala Gly Val Thr
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Gly Leu Val Ile Ser Leu Ala Leu Val Leu Ile Met Thr Ser Ser Thr
 180 185 190

Glu Phe Ile Arg Gln Ala Ser Tyr Glu Leu Phe Trp Tyr Thr His His
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Val Phe Ile Val Phe Phe Leu Ser Leu Ala Ile His Gly Thr Gly Arg
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Ile Val Arg Gly Gln Thr Gln Asp Ser Leu Ser Leu His Asn Ile Thr
 225 230 235 240

Phe Cys Arg Asp Arg Tyr Ala Glu Trp Gln Thr Val Ala Gln Cys Pro
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Val Pro Gln Phe Ser Gly Lys Glu Pro Ser Ala Trp Lys Trp Ile Leu
 260 265 270

Gly Pro Val Val Leu Tyr Ala Cys Glu Arg Ile Ile Arg Phe Trp Arg
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Phe Gln Gln Glu Val Val Ile Thr Lys Val Val Ser His Pro Ser Gly
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Val Leu Glu Leu His Met Lys Lys Arg Gly Phe Lys Met Ala Pro Gly
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Gln Tyr Ile Leu Val Gln Cys Pro Ala Ile Ser Ser Leu Glu Trp His
 325 330 335

Pro Phe Thr Leu Thr Ser Ala Pro Gln Glu Asp Phe Phe Ser Val His
 340 345 350

Ile Arg Ala Ala Gly Asp Trp Thr Ala Ala Leu Leu Glu Ala Phe Gly
 355 360 365

Ala Glu Gly Gln Ala Leu Gln Glu Pro Trp Ser Leu Pro Arg Leu Ala
 370 375 380

Val Asp Gly Pro Phe Gly Thr Ala Leu Thr Asp Val Phe His Tyr Pro
 385 390 395 400

Val Cys Val Cys Val Ala Ala Gly Ile Gly Val Thr Pro Phe Ala Ala
 405 410 415

Leu Leu Lys Ser Ile Trp Tyr Lys Cys Ser Glu Ala Gln Thr Pro Leu
 420 425 430

Lys Leu Ser Lys Val Tyr Phe Tyr Trp Ile Cys Arg Asp Ala Arg Ala
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Phe Glu Trp Phe Ala Asp Leu Leu Leu Ser Leu Glu Thr Arg Met Ser
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Glu Gln Gly Lys Thr His Phe Leu Ser Tyr His Ile Phe Leu Thr Gly
 465 470 475 480

Trp Asp Glu Asn Gln Ala Leu His Ile Ala Leu His Trp Asp Glu Asn
 485 490 495

Thr Asp Val Ile Thr Gly Leu Lys Gln Lys Thr Phe Tyr Gly Arg Pro
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Asn Trp Asn Asn Glu Phe Lys Gln Ile Ala Tyr Asn His Pro Ser Ser
 515 520 525

Ser Ile Gly Val Phe Phe Cys Gly Pro Lys Ala Leu Ser Arg Thr Leu
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Phe Tyr Tyr Asn Lys Glu Ser Phe
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<222> (104)..(1810)

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Met. Met Gly Cys
1tgg att ttg aat gag ggt ctc tcc acc ata tta gta ctg tca tgg ctg 163
Trp Ile Leu Asn Glu Gly Leu Ser Thr Ile Leu Val Leu Ser Trp Leu
5 10 15 20gga ata aat ttt tat ctg ttt att gac acg ttc tac tgg tat gaa gag 211
Gly Ile Asn Phe Tyr Leu Phe Ile Asp Thr Phe Tyr Trp Tyr Glu Glu
25 30 35gag gag tct ttc cat tac aca cga gtt att ttg ggt tca aca ctg gct 259
Glu Glu Ser Phe His Tyr Thr Arg Val Ile Leu Gly Ser Thr Leu Ala
40 45 50tgg gca cga gca tcc gca ctg tgc ctg aat ttt aac tgc atg cta att 307
Trp Ala Arg Ala Ser Ala Leu Cys Leu Asn Phe Asn Cys Met Leu Ile
55 60 65cta ata cct gtc agt cga aac ctt att tca ttc ata aga gga aca agt 355
Leu Ile Pro Val Ser Arg Asn Leu Ile Ser Phe Ile Arg Gly Thr Ser
70 75 80att tgc tgc aga gga ccg tgg agg agg caa tta gac aaa aac ctg aga 403
Ile Cys Cys Arg Gly Pro Trp Arg Arg Gln Leu Asp Lys Asn Leu Arg
85 90 95 100ttt cac aaa ctg gtc gcc tat ggg ata gct gtt aat gca acc atc cac 451
Phe His Lys Leu Val Ala Tyr Gly Ile Ala Val Asn Ala Thr Ile His
105 110 115atc gtg gcg cat ttc ttc aac ctg gaa cgc tac cac tgg agc cag tcc 499
Ile Val Ala His Phe Phe Asn Leu Glu Arg Tyr His Trp Ser Gln Ser
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Glu Glu Ala Gln Gly Leu Leu Ala Ala Leu Ser Lys Leu Gly Asn Thr
135 140 145cct aac gag agc tac ctg aac cct gtc cgg acc ttc ccc aca aac aca 595
Pro Asn Glu Ser Tyr Leu Asn Pro Val Arg Thr Phe Pro Thr Asn Thr
150 155 160

acc act gaa ttg cta agg aca ata gca ggc gtc acc ggt ctg gtg atc 643

Thr	Thr	Glu	Leu	Leu	Arg	Thr	Ile	Ala	Gly	Val	Thr	Gly	Leu	Val	Ile		
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Ser	Leu	Ala	Leu	Val	Leu	Ile	Met	Thr	Ser	Ser	Thr	Glu	Phe	Ile	Arg		
			185					190					195				
cag	gcc	tcc	tat	gag	ttg	ttc	tgg	tac	aca	cac	cat	gtt	ttc	atc	gtc	739	
Gln	Ala	Ser	Tyr	Glu	Leu	Phe	Trp	Tyr	Thr	His	His	Val	Phe	Ile	Val		
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Phe	Phe	Leu	Ser	Leu	Ala	Ile	His	Gly	Thr	Gly	Arg	Ile	Val	Arg	Gly		
		215					220					225					
caa	acc	caa	gac	agt	ctc	tct	ctg	cac	aac	atc	acc	ttc	tgt	aga	gac	835	
Gln	Thr	Gln	Asp	Ser	Leu	Ser	Leu	His	Asn	Ile	Thr	Phe	Cys	Arg	Asp		
	230					235					240						
cgc	tat	gca	gaa	tgg	cag	aca	gtg	gcc	caa	tgc	ccc	gtg	cct	caa	ttt	883	
Arg	Tyr	Ala	Glu	Trp	Gln	Thr	Val	Ala	Gln	Cys	Pro	Val	Pro	Gln	Phe		
245					250					255					260		
tct	ggc	aag	gaa	ccc	tcg	gct	tgg	aaa	tgg	att	tta	ggc	cct	gtg	gtc	931	
Ser	Gly	Lys	Glu	Pro	Ser	Ala	Trp	Lys	Trp	Ile	Leu	Gly	Pro	Val	Val		
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ttg	tat	gca	tgt	gaa	aga	ata	att	agg	ttc	tgg	cga	ttt	caa	caa	gaa	979	
Leu	Tyr	Ala	Cys	Glu	Arg	Ile	Ile	Arg	Phe	Trp	Arg	Phe	Gln	Gln	Glu		
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gtt	gtc	att	acc	aag	gtg	gta	agc	cac	ccc	tct	gga	gtc	ctg	gaa	ctt	1027	
Val	Val	Ile	Thr	Lys	Val	Val	Ser	His	Pro	Ser	Gly	Val	Leu	Glu	Leu		
		295					300					305					
cac	atg	aaa	aag	cgt	ggc	ttt	aaa	atg	gcg	cca	ggg	cag	tac	atc	ttg	1075	
His	Met	Lys	Lys	Arg	Gly	Phe	Lys	Met	Ala	Pro	Gly	Gln	Tyr	Ile	Leu		
	310					315					320						
gtg	cag	tgc	cca	gcc	ata	tct	tcg	ctg	gag	tgg	cac	ccc	ttc	acc	ctt	1123	
Val	Gln	Cys	Pro	Ala	Ile	Ser	Ser	Leu	Glu	Trp	His	Pro	Phe	Thr	Leu		
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acc	tct	gcc	ccc	cag	gaa	gac	ttt	ttc	agc	gtg	cac	atc	cgg	gca	gca	1171	
Thr	Ser	Ala	Pro	Gln	Glu	Asp	Phe	Phe	Ser	Val	His	Ile	Arg	Ala	Ala		
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gga	gac	tgg	aca	gca	gcg	cta	ctg	gag	gcc	ttt	ggg	gca	gag	gga	cag	1219	
Gly	Asp	Trp	Thr	Ala	Ala	Leu	Leu	Glu	Ala	Phe	Gly	Ala	Glu	Gly	Gln		
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gcc	ctc	cag	gag	ccc	tgg	agc	ctg	cca	agg	ctg	gca	gtg	gac	ggg	ccc	1267	
Ala	Leu	Gln	Glu	Pro	Trp	Ser	Leu	Pro	Arg	Leu	Ala	Val	Asp	Gly	Pro		
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Phe Gly Thr Ala Leu Thr Asp Val Phe His Tyr Pro Val Cys Val Cys	
390 395 400	
ggt gcc gcg ggg atc gga gtc act ccc ttc gct gct ctt ctg aaa tct	1363
Val Ala Ala Gly Ile Gly Val Thr Pro Phe Ala Ala Leu Leu Lys Ser	
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ata tgg tac aaa tgc agt gag gca cag acc cca ctg aag ctg agc aag	1411
Ile Trp Tyr Lys Cys Ser Glu Ala Gln Thr Pro Leu Lys Leu Ser Lys	
425 430 435	
gtg tat ttc tac tgg att tgc cgg gat gca aga gct ttt gag tgg ttt	1459
Val Tyr Phe Tyr Trp Ile Cys Arg Asp Ala Arg Ala Phe Glu Trp Phe	
440 445 450	
gct gat ctc tta ctc tcc ctg gaa aca cgg atg agt gag cag ggg aaa	1507
Ala Asp Leu Leu Leu Ser Leu Glu Thr Arg Met Ser Glu Gln Gly Lys	
455 460 465	
act cac ttt ctg agt tat cat ata ttt ctt acc ggc tgg gat gaa aat	1555
Thr His Phe Leu Ser Tyr His Ile Phe Leu Thr Gly Trp Asp Glu Asn	
470 475 480	
cag gct ctt cac ata gct tta cac tgg gac gaa aat act gac gtg att	1603
Gln Ala Leu His Ile Ala Leu His Trp Asp Glu Asn Thr Asp Val Ile	
485 490 495 500	
aca ggc tta aag cag aag acc ttc tat ggg agg ccc aac tgg aac aat	1651
Thr Gly Leu Lys Gln Lys Thr Phe Tyr Gly Arg Pro Asn Trp Asn Asn	
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gag ttc aag cag att gcc tac aat cac ccc agc agc agt att ggc gtg	1699
Glu Phe Lys Gln Ile Ala Tyr Asn His Pro Ser Ser Ser Ile Gly Val	
520 525 530	
ttc ttc tgt gga cct aaa gct ctc tcg agg aca ctt caa aag atg tgc	1747
Phe Phe Cys Gly Pro Lys Ala Leu Ser Arg Thr Leu Gln Lys Met Cys	
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His Leu Tyr Ser Ser Ala Asp Pro Arg Gly Val His Phe Tyr Tyr Asn	
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Lys Glu Ser Phe	
565	
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2044

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<212> PRT

<213> Homo sapiens

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Leu Ser Trp Leu Gly Ile Asn Phe Tyr Leu Phe Ile Asp Thr Phe Tyr
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Trp Tyr Glu Glu Glu Ser Phe His Tyr Thr Arg Val Ile Leu Gly
 35 40 45

Ser Thr Leu Ala Trp Ala Arg Ala Ser Ala Leu Cys Leu Asn Phe Asn
 50 55 60

Cys Met Leu Ile Leu Ile Pro Val Ser Arg Asn Leu Ile Ser Phe Ile
 65 70 75 80

Arg Gly Thr Ser Ile Cys Cys Arg Gly Pro Trp Arg Arg Gln Leu Asp
 85 90 95

Lys Asn Leu Arg Phe His Lys Leu Val Ala Tyr Gly Ile Ala Val Asn
 100 105 110

Ala Thr Ile His Ile Val Ala His Phe Phe Asn Leu Glu Arg Tyr His
 115 120 125

Trp Ser Gln Ser Glu Glu Ala Gln Gly Leu Leu Ala Ala Leu Ser Lys
 130 135 140

Leu Gly Asn Thr Pro Asn Glu Ser Tyr Leu Asn Pro Val Arg Thr Phe
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Pro Thr Asn Thr Thr Thr Glu Leu Leu Arg Thr Ile Ala Gly Val Thr
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Gly Leu Val Ile Ser Leu Ala Leu Val Leu Ile Met Thr Ser Ser Thr
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Glu Phe Ile Arg Gln Ala Ser Tyr Glu Leu Phe Trp Tyr Thr His His
 195 200 205

Val Phe Ile Val Phe Phe Leu Ser Leu Ala Ile His Gly Thr Gly Arg
 210 215 220

Ile Val Arg Gly Gln Thr Gln Asp Ser Leu Ser Leu His Asn Ile Thr
 225 230 235 240

Phe Cys Arg Asp Arg Tyr Ala Glu Trp Gln Thr Val Ala Gln Cys Pro
 245 250 255

Val Pro Gln Phe Ser Gly Lys Glu Pro Ser Ala Trp Lys Trp Ile Leu
 260 265 270

Gly Pro Val Val Leu Tyr Ala Cys Glu Arg Ile Ile Arg Phe Trp Arg
 275 280 285

Phe Gln Gln Glu Val Val Ile Thr Lys Val Val Ser His Pro Ser Gly
 290 295 300

Val Leu Glu Leu His Met Lys Lys Arg Gly Phe Lys Met Ala Pro Gly
 305 310 315 320

Gln Tyr Ile Leu Val Gln Cys Pro Ala Ile Ser Ser Leu Glu Trp His
 325 330 335

Pro Phe Thr Leu Thr Ser Ala Pro Gln Glu Asp Phe Phe Ser Val His
 340 345 350

Ile Arg Ala Ala Gly Asp Trp Thr Ala Ala Leu Leu Glu Ala Phe Gly
 355 360 365

Ala Glu Gly Gln Ala Leu Gln Glu Pro Trp Ser Leu Pro Arg Leu Ala
 370 375 380

Val Asp Gly Pro Phe Gly Thr Ala Leu Thr Asp Val Phe His Tyr Pro
 385 390 395 400

Val Cys Val Cys Val Ala Ala Gly Ile Gly Val Thr Pro Phe Ala Ala
 405 410 415

Leu Leu Lys Ser Ile Trp Tyr Lys Cys Ser Glu Ala Gln Thr Pro Leu
 420 425 430

Lys Leu Ser Lys Val Tyr Phe Tyr Trp Ile Cys Arg Asp Ala Arg Ala
 435 440 445

Phe Glu Trp Phe Ala Asp Leu Leu Leu Ser Leu Glu Thr Arg Met Ser
 450 455 460

Glu Gln Gly Lys Thr His Phe Leu Ser Tyr His Ile Phe Leu Thr Gly
 465 470 475 480

Trp Asp Glu Asn Gln Ala Leu His Ile Ala Leu His Trp Asp Glu Asn
 485 490 495

Thr Asp Val Ile Thr Gly Leu Lys Gln Lys Thr Phe Tyr Gly Arg Pro
 500 505 510

Asn Trp Asn Asn Glu Phe Lys Gln Ile Ala Tyr Asn His Pro Ser Ser
 515 520 525

Ser Ile Gly Val Phe Phe Cys Gly Pro Lys Ala Leu Ser Arg Thr Leu
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<213> Homo sapiens

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<222> (87)..(1823)

<223>

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Met Ala Val Ser Trp Arg Ser Trp Leu
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gcc aac gaa ggg gtt aaa cac ctc tgc ctg ttc atc tgg ctc tcc atg 161

Ala Asn Glu Gly Val Lys His Leu Cys Leu Phe Ile Trp Leu Ser Met
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aat gtc ctg ctt ttc tgg aaa acc ttc ttg ctg tat aac caa ggg cca 209

Asn Val Leu Leu Phe Trp Lys Thr Phe Leu Leu Tyr Asn Gln Gly Pro
30 35 40

gag tat cac tac ctc cac cag atg ttg ggg cta gga ttg tgt cta agc 257

Glu Tyr His Tyr Leu His Gln Met Leu Gly Leu Gly Leu Cys Leu Ser
45 50 55

aga gcc tca gca tct gtt ctt aac ctc aac tgc agc ctt atc ctt tta 305

Arg Ala Ser Ala Ser Val Leu Asn Leu Asn Cys Ser Leu Ile Leu Leu
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ccc atg tgc cga aca ctc ttg gct tac ctc cga gga tca cag aag gtt 353

Pro Met Cys Arg Thr Leu Leu Ala Tyr Leu Arg Gly Ser Gln Lys Val
75 80 85

cca agc agg aga acc agg aga ttg ttg gat aaa agc aga aca ttc cat 401

Pro Ser Arg Arg Thr Arg Arg Leu Leu Asp Lys Ser Arg Thr Phe His
90 95 100 105

att acc tgt ggt gtt act atc tgt att ttc tca ggc gtg cat gtg gct 449

Ile Thr Cys Gly Val Thr Ile Cys Ile Phe Ser Gly Val His Val Ala
110 115 120

gcc cat ctg gtg aat gcc ctc aac ttc tca gtg aat tac agt gaa gac 497

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Phe	Val	Glu	Leu	Asn	Ala	Ala	Arg	Tyr	Arg	Asp	Glu	Asp	Pro	Arg	Lys		
		140					145					150					
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Leu	Leu	Phe	Thr	Thr	Val	Pro	Gly	Leu	Thr	Gly	Val	Cys	Met	Val	Val		
		155				160					165						
gtg	cta	ttc	ctc	atg	atc	aca	gcc	tct	aca	tat	gca	ata	aga	gtt	tct		641
Val	Leu	Phe	Leu	Met	Ile	Thr	Ala	Ser	Thr	Tyr	Ala	Ile	Arg	Val	Ser		
170					175					180					185		
aac	tat	gat	atc	ttc	tgg	tat	act	cat	aac	ctc	ttc	ttt	gtc	ttc	tac		689
Asn	Tyr	Asp	Ile	Phe	Trp	Tyr	Thr	His	Asn	Leu	Phe	Phe	Val	Phe	Tyr		
			190						195					200			
atg	ctg	ctg	acg	ttg	cat	ggt	tca	gga	ggg	ctg	ctg	aag	tat	caa	act		737
Met	Leu	Leu	Thr	Leu	His	Val	Ser	Gly	Gly	Leu	Leu	Lys	Tyr	Gln	Thr		
			205					210					215				
aat	tta	gat	acc	cac	cct	ccc	ggc	tgc	atc	agt	ctt	aac	cga	acc	agc		785
Asn	Leu	Asp	Thr	His	Pro	Pro	Gly	Cys	Ile	Ser	Leu	Asn	Arg	Thr	Ser		
		220					225					230					
tct	cag	aat	att	tcc	tta	cca	gag	tat	ttc	tca	gaa	cat	ttt	cat	gaa		833
Ser	Gln	Asn	Ile	Ser	Leu	Pro	Glu	Tyr	Phe	Ser	Glu	His	Phe	His	Glu		
	235					240					245						
cct	ttc	cct	gaa	gga	ttt	tca	aaa	ccg	gca	gag	ttt	acc	cag	cac	aaa		881
Pro	Phe	Pro	Glu	Gly	Phe	Ser	Lys	Pro	Ala	Glu	Phe	Thr	Gln	His	Lys		
250					255					260					265		
ttt	gtg	aag	att	tgt	atg	gaa	gag	ccc	aga	ttc	caa	gct	aat	ttt	cca		929
Phe	Val	Lys	Ile	Cys	Met	Glu	Glu	Pro	Arg	Phe	Gln	Ala	Asn	Phe	Pro		
			270					275						280			
cag	act	tgg	ctt	tgg	att	tct	gga	cct	ttg	tgc	ctg	tac	tgt	gcc	gaa		977
Gln	Thr	Trp	Leu	Trp	Ile	Ser	Gly	Pro	Leu	Cys	Leu	Tyr	Cys	Ala	Glu		
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Arg	Leu	Tyr	Arg	Tyr	Ile	Arg	Ser	Asn	Lys	Pro	Val	Thr	Ile	Ile	Ser		
		300					305					310					
gtc	ata	agt	cat	ccc	tca	gat	gtc	atg	gaa	atc	cga	atg	gtc	aaa	gaa		1073
Val	Ile	Ser	His	Pro	Ser	Asp	Val	Met	Glu	Ile	Arg	Met	Val	Lys	Glu		
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aat	ttt	aaa	gca	aga	cct	ggt	cag	tat	att	act	cta	cat	tgt	ccc	agt		1121
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Val Ser Ala Leu Glu Asn His Pro Phe Thr Leu Thr Met Cys Pro Thr	
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gaa acc aaa gca aca ttt ggg gtt cat ctt aaa ata gta gga gac tgg	1217
Glu Thr Lys Ala Thr Phe Gly Val His Leu Lys Ile Val Gly Asp Trp	
365 370 375	
aca gaa cga ttt cga gat tta cta ctg cct cca tct agt caa gac tcc	1265
Thr Glu Arg Phe Arg Asp Leu Leu Leu Pro Pro Ser Ser Gln Asp Ser	
380 385 390	
gaa att ctg ccc ttc att caa tct aga aat tat ccc aag ctg tat att	1313
Glu Ile Leu Pro Phe Ile Gln Ser Arg Asn Tyr Pro Lys Leu Tyr Ile	
395 400 405	
gat ggt cct ttt gga agt cca ttt gag gaa tca ctg aac tat gag gtc	1361
Asp Gly Pro Phe Gly Ser Pro Phe Glu Glu Ser Leu Asn Tyr Glu Val	
410 415 420 425	
agc ctc tgc gtg gct gga ggc att gga gta act cca ttt gca tca ata	1409
Ser Leu Cys Val Ala Gly Gly Ile Gly Val Thr Pro Phe Ala Ser Ile	
430 435 440	
ctc aac acc ctg ttg gat gac tgg aaa cca tac aag ctt aga aga cta	1457
Leu Asn Thr Leu Leu Asp Asp Trp Lys Pro Tyr Lys Leu Arg Arg Leu	
445 450 455	
tac ttt att tgg gta tgc aga gat atc cag tcc ttc cgt tgg ttt gca	1505
Tyr Phe Ile Trp Val Cys Arg Asp Ile Gln Ser Phe Arg Trp Phe Ala	
460 465 470	
gat tta ctc tgt atg ttg cat aac aag ttt tgg caa gag aac aga cct	1553
Asp Leu Leu Cys Met Leu His Asn Lys Phe Trp Gln Glu Asn Arg Pro	
475 480 485	
gac tat gtc aac atc cag ctg tac ctc agt caa aca gat ggg ata cag	1601
Asp Tyr Val Asn Ile Gln Leu Tyr Leu Ser Gln Thr Asp Gly Ile Gln	
490 495 500 505	
aag ata att gga gaa aaa tat cat gca ctg aat tca aga ctg ttt ata	1649
Lys Ile Ile Gly Glu Lys Tyr His Ala Leu Asn Ser Arg Leu Phe Ile	
510 515 520	
gga cgt cct cgg tgg aaa ctt ttg ttt gat gaa ata gca aaa tat aac	1697
Gly Arg Pro Arg Trp Lys Leu Leu Phe Asp Glu Ile Ala Lys Tyr Asn	
525 530 535	
aga gga aaa aca gtt ggt gtt ttc tgt tgt gga ccc aat tca cta tcc	1745
Arg Gly Lys Thr Val Gly Val Phe Cys Cys Gly Pro Asn Ser Leu Ser	
540 545 550	
aag act ctt cat aaa ctg agt aac cag aac aac tca tat ggg aca aga	1793

Lys Thr Leu His Lys Leu Ser Asn Gln Asn Asn Ser Tyr Gly Thr Arg
 555 560 565

ttt gaa tac aat aaa gag tct ttc agc tga aaacttttgc catgaagcag 1843
 Phe Glu Tyr Asn Lys Glu Ser Phe Ser
 570 575

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tgagaatgtg gcaacatgac cgtcacatta catgtttaat ctggaaacca aagagaccct 2023

gaagaatatt tgatgtgatg attcattttc agttctcaaa ttaaaagaaa actgttagat 2083

gcacactggt gattttcatg gtggattcaa gaactccta gtgaggagct gaacttgctc 2143

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Thr Phe Leu Leu Tyr Asn Gln Gly Pro Glu Tyr His Tyr Leu His Gln
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Met Leu Gly Leu Gly Leu Cys Leu Ser Arg Ala Ser Ala Ser Val Leu
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Asn Leu Asn Cys Ser Leu Ile Leu Leu Pro Met Cys Arg Thr Leu Leu
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Ala Tyr Leu Arg Gly Ser Gln Lys Val Pro Ser Arg Arg Thr Arg Arg
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Leu Leu Asp Lys Ser Arg Thr Phe His Ile Thr Cys Gly Val Thr Ile
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Cys Ile Phe Ser Gly Val His Val Ala Ala His Leu Val Asn Ala Leu
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Arg Tyr Arg Asp Glu Asp Pro Arg Lys Leu Leu Phe Thr Thr Val Pro
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Gly Leu Thr Gly Val Cys Met Val Val Val Leu Phe Leu Met Ile Thr
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Ala Ser Thr Tyr Ala Ile Arg Val Ser Asn Tyr Asp Ile Phe Trp Tyr
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Thr His Asn Leu Phe Phe Val Phe Tyr Met Leu Leu Thr Leu His Val
195 200 205

Ser Gly Gly Leu Leu Lys Tyr Gln Thr Asn Leu Asp Thr His Pro Pro
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Gly Cys Ile Ser Leu Asn Arg Thr Ser Ser Gln Asn Ile Ser Leu Pro
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Glu Tyr Phe Ser Glu His Phe His Glu Pro Phe Pro Glu Gly Phe Ser
245 250 255

Lys Pro Ala Glu Phe Thr Gln His Lys Phe Val Lys Ile Cys Met Glu
260 265 270

Glu Pro Arg Phe Gln Ala Asn Phe Pro Gln Thr Trp Leu Trp Ile Ser
275 280 285

Gly Pro Leu Cys Leu Tyr Cys Ala Glu Arg Leu Tyr Arg Tyr Ile Arg
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Ser Asn Lys Pro Val Thr Ile Ile Ser Val Ile Ser His Pro Ser Asp
 305 310 315 320

Val Met Glu Ile Arg Met Val Lys Glu Asn Phe Lys Ala Arg Pro Gly
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Gln Tyr Ile Thr Leu His Cys Pro Ser Val Ser Ala Leu Glu Asn His
 340 345 350

Pro Phe Thr Leu Thr Met Cys Pro Thr Glu Thr Lys Ala Thr Phe Gly
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Val His Leu Lys Ile Val Gly Asp Trp Thr Glu Arg Phe Arg Asp Leu
 370 375 380

Leu Leu Pro Pro Ser Ser Gln Asp Ser Glu Ile Leu Pro Phe Ile Gln
 385 390 395 400

Ser Arg Asn Tyr Pro Lys Leu Tyr Ile Asp Gly Pro Phe Gly Ser Pro
 405 410 415

Phe Glu Glu Ser Leu Asn Tyr Glu Val Ser Leu Cys Val Ala Gly Gly
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Ile Gly Val Thr Pro Phe Ala Ser Ile Leu Asn Thr Leu Leu Asp Asp
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Trp Lys Pro Tyr Lys Leu Arg Arg Leu Tyr Phe Ile Trp Val Cys Arg
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Asp Ile Gln Ser Phe Arg Trp Phe Ala Asp Leu Leu Cys Met Leu His
 465 470 475 480

Asn Lys Phe Trp Gln Glu Asn Arg Pro Asp Tyr Val Asn Ile Gln Leu
 485 490 495

Tyr Leu Ser Gln Thr Asp Gly Ile Gln Lys Ile Ile Gly Glu Lys Tyr
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His Ala Leu Asn Ser Arg Leu Phe Ile Gly Arg Pro Arg Trp Lys Leu
 515 520 525

Leu Phe Asp Glu Ile Ala Lys Tyr Asn Arg Gly Lys Thr Val Gly Val
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Met Glu Asn Leu Thr Ile Ser Thr Ala His Trp Leu Thr

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Ala Pro Ala Pro Arg Pro Arg Pro Arg Arg Pro Arg Gln Leu Thr Arg

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25

gcc tac tgg cac aac cac cgc agc cag ctg ttc tgc ctg gcc acc tat 207

Ala Tyr Trp His Asn His Arg Ser Gln Leu Phe Cys Leu Ala Thr Tyr

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Ala Gly Leu His Val Leu Leu Phe Gly Leu Ala Ala Ser Ala His Arg	
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Asp Leu Gly Ala Ser Val Met Val Ala Lys Gly Cys Gly Gln Cys Leu	
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Asn Phe Asp Cys Ser Phe Ile Ala Val Leu Met Leu Arg Arg Cys Leu	
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Thr Trp Leu Arg Ala Thr Trp Leu Ala Gln Val Leu Pro Leu Asp Gln	
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aac atc cag ttc cac cag ctt atg ggc tac gtg gta gtg ggg ctg tcc	447
Asn Ile Gln Phe His Gln Leu Met Gly Tyr Val Val Val Gly Leu Ser	
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Leu Val His Thr Val Ala His Thr Val Asn Phe Val Leu Gln Ala Gln	
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Ala Glu Ala Ser Pro Phe Gln Phe Trp Glu Leu Leu Leu Thr Thr Arg	
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Pro Gly Ile Gly Trp Val His Gly Ser Ala Ser Pro Thr Gly Val Ala	
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Arg Arg Ser Gly His Phe Glu Val Phe Tyr Trp Thr His Leu Ser Tyr	
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Leu Leu Val Trp Leu Leu Leu Ile Phe His Gly Pro Asn Phe Trp Lys	
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tgg ctg ctg gtg cct gga atc ttg ttt ttc ctg gag aag gcc atc gga	783
Trp Leu Leu Val Pro Gly Ile Leu Phe Phe Leu Glu Lys Ala Ile Gly	
225 230 235	
ctg gca gtg tcc cgc atg gca gcc gtg tgc atc atg gaa gtc aac ctc	831
Leu Ala Val Ser Arg Met Ala Ala Val Cys Ile Met Glu Val Asn Leu	
240 245 250	
ctc ccc tcc aag gtc act cat ctc ctc atc aag cgg ccc cct ttt ttt	879

Leu	Pro	Ser	Lys	Val	Thr	His	Leu	Leu	Ile	Lys	Arg	Pro	Pro	Phe	Phe		
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His	Tyr	Arg	Pro	Gly	Asp	Tyr	Leu	Tyr	Leu	Asn	Ile	Pro	Thr	Ile	Ala		
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cgc	tat	gag	tgg	cac	ccc	ttc	acc	atc	agc	agt	gct	cct	gag	cag	aaa		975
Arg	Tyr	Glu	Trp	His	Pro	Phe	Thr	Ile	Ser	Ser	Ala	Pro	Glu	Gln	Lys		
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gac	act	atc	tgg	ctg	cac	att	cgg	tcc	caa	ggc	cag	tgg	aca	aac	agg		1023
Asp	Thr	Ile	Trp	Leu	His	Ile	Arg	Ser	Gln	Gly	Gln	Trp	Thr	Asn	Arg		
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Leu	Tyr	Glu	Ser	Phe	Lys	Ala	Ser	Asp	Pro	Leu	Gly	Arg	Gly	Ser	Lys		
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agg	ctg	tcg	agg	agt	gtg	aca	atg	aga	aag	agt	caa	agg	tcg	tcc	aag		1119
Arg	Leu	Ser	Arg	Ser	Val	Thr	Met	Arg	Lys	Ser	Gln	Arg	Ser	Ser	Lys		
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ggc	tct	gag	ata	ctt	ttg	gag	aaa	cac	aaa	ttc	tgt	aac	atc	aag	tgc		1167
Gly	Ser	Glu	Ile	Leu	Leu	Glu	Lys	His	Lys	Phe	Cys	Asn	Ile	Lys	Cys		
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Tyr	Ile	Asp	Gly	Pro	Tyr	Gly	Thr	Pro	Thr	Arg	Arg	Ile	Phe	Ala	Ser		
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gag	cat	gcc	gtg	ctc	atc	ggg	gca	ggc	atc	ggc	atc	acc	ccc	ttt	gct		1263
Glu	His	Ala	Val	Leu	Ile	Gly	Ala	Gly	Ile	Gly	Ile	Thr	Pro	Phe	Ala		
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tcc	att	ctg	cag	agt	atc	atg	tac	agg	cac	cag	aaa	aga	aag	cat	act		1311
Ser	Ile	Leu	Gln	Ser	Ile	Met	Tyr	Arg	His	Gln	Lys	Arg	Lys	His	Thr		
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tgc	ccc	agc	tgc	cag	cac	tcc	tgg	atc	gaa	ggt	gtc	caa	gac	aac	atg		1359
Cys	Pro	Ser	Cys	Gln	His	Ser	Trp	Ile	Glu	Gly	Val	Gln	Asp	Asn	Met		
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aag	ctc	cat	aag	gtg	gac	ttt	atc	tgg	atc	aac	aga	gac	cag	cgg	tct		1407
Lys	Leu	His	Lys	Val	Asp	Phe	Ile	Trp	Ile	Asn	Arg	Asp	Gln	Arg	Ser		
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Phe	Glu	Trp	Phe	Val	Ser	Leu	Leu	Thr	Lys	Leu	Glu	Met	Asp	Gln	Ala		
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gag	gag	gct	caa	tac	ggc	cgc	ttc	ctg	gag	ctg	cat	atg	tac	atg	aca		1503
Glu	Glu	Ala	Gln	Tyr	Gly	Arg	Phe	Leu	Glu	Leu	His	Met	Tyr	Met	Thr		
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ctt gac ctg ctg gcc aac aag gag aag aaa gac tcc atc acg ggg ctg 1599
 Leu Asp Leu Leu Ala Asn Lys Glu Lys Lys Asp Ser Ile Thr Gly Leu
 495 500 505

cag acg cgc acc cag cct ggg cgg cct gac tgg agc aag gtg ttc cag 1647
 Gln Thr Arg Thr Gln Pro Gly Arg Pro Asp Trp Ser Lys Val Phe Gln
 510 515 520 525

aaa gtg gct gct gag aag aag ggc aag gtg cag gtc ttc ttc tgt ggc 1695
 Lys Val Ala Ala Glu Lys Lys Gly Lys Val Gln Val Phe Phe Cys Gly
 530 535 540

tcc cca get ctg gcc aag gtg ctg aag ggc cat tgt gag aag ttc ggc 1743
 Ser Pro Ala Leu Ala Lys Val Leu Lys Gly His Cys Glu Lys Phe Gly
 545 550 555

ttc aga ttt ttc caa gag aat ttc tag cctcacctct ccaagctctg 1790
 Phe Arg Phe Phe Gln Glu Asn Phe
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ggtcacggga gcttgggggt ggggttcgag ggggcagagg gcaaccactc ctccaâacat 2090

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His Val Leu Leu Phe Gly Leu Ala Ala Ser Ala His Arg Asp Leu Gly
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Ala Ser Val Met Val Ala Lys Gly Cys Gly Gln Cys Leu Asn Phe Asp
65 70 75 80

Cys Ser Phe Ile Ala Val Leu Met Leu Arg Arg Cys Leu Thr Trp Leu
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Arg Ala Thr Trp Leu Ala Gln Val Leu Pro Leu Asp Gln Asn Ile Gln
100 105 110

Phe His Gln Leu Met Gly Tyr Val Val Val Gly Leu Ser Leu Val His
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Thr Val Ala His Thr Val Asn Phe Val Leu Gln Ala Gln Ala Glu Ala
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Ser Pro Phe Gln Phe Trp Glu Leu Leu Leu Thr Thr Arg Pro Gly Ile
145 150 155 160

Gly Trp Val His Gly Ser Ala Ser Pro Thr Gly Val Ala Leu Leu Leu
165 170 175

Leu Leu Leu Leu Met Phe Ile Cys Ser Ser Ser Cys Ile Arg Arg Ser
180 185 190

Gly His Phe Glu Val Phe Tyr Trp Thr His Leu Ser Tyr Leu Leu Val
195 200 205

Trp Leu Leu Leu Ile Phe His Gly Pro Asn Phe Trp Lys Trp Leu Leu
210 215 220

Val Pro Gly Ile Leu Phe Phe Leu Glu Lys Ala Ile Gly Leu Ala Val
 225 230 235 240

Ser Arg Met Ala Ala Val Cys Ile Met Glu Val Asn Leu Leu Pro Ser
 245 250 255

Lys Val Thr His Leu Leu Ile Lys Arg Pro Pro Phe Phe His Tyr Arg
 260 265 270

Pro Gly Asp Tyr Leu Tyr Leu Asn Ile Pro Thr Ile Ala Arg Tyr Glu
 275 280 285

Trp His Pro Phe Thr Ile Ser Ser Ala Pro Glu Gln Lys Asp Thr Ile
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Trp Leu His Ile Arg Ser Gln Gly Gln Trp Thr Asn Arg Leu Tyr Glu
 305 310 315 320

Ser Phe Lys Ala Ser Asp Pro Leu Gly Arg Gly Ser Lys Arg Leu Ser
 325 330 335

Arg Ser Val Thr Met Arg Lys Ser Gln Arg Ser Ser Lys Gly Ser Glu
 340 345 350

Ile Leu Leu Glu Lys His Lys Phe Cys Asn Ile Lys Cys Tyr Ile Asp
 355 360 365

Gly Pro Tyr Gly Thr Pro Thr Arg Arg Ile Phe Ala Ser Glu His Ala
 370 375 380

Val Leu Ile Gly Ala Gly Ile Gly Ile Thr Pro Phe Ala Ser Ile Leu
 385 390 395 400

Gln Ser Ile Met Tyr Arg His Gln Lys Arg Lys His Thr Cys Pro Ser
 405 410 415

Cys Gln His Ser Trp Ile Glu Gly Val Gln Asp Asn Met Lys Leu His
 420 425 430

Lys Val Asp Phe Ile Trp Ile Asn Arg Asp Gln Arg Ser Phe Glu Trp
 435 440 445

Phe Val Ser Leu Leu Thr Lys Leu Glu Met Asp Gln Ala Glu Glu Ala
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Gln Tyr Gly Arg Phe Leu Glu Leu His Met Tyr Met Thr Ser Ala Leu
 465 470 475 480

Gly Lys Asn Asp Met Lys Ala Ile Gly Leu Gln Met Ala Leu Asp Leu
 485 490 495

Leu Ala Asn Lys Glu Lys Lys Asp Ser Ile Thr Gly Leu Gln Thr Arg
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Thr Gln Pro Gly Arg Pro Asp Trp Ser Lys Val Phe Gln Lys Val Ala
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Ala Glu Lys Lys Gly Lys Val Gln Val Phe Phe Cys Gly Ser Pro Ala
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Cys Leu Ala Leu Ala Trp Thr Leu Leu Val Gly Ala Trp Thr Pro Leu
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Gly Ala Gln Asn Pro Ile Ser Trp Glu Val Gln Arg Phe Asp Gly Trp
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Tyr Asn Asn Leu Met Glu His Arg Trp Gly Ser Lys Gly Ser Arg Leu
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cag cgc ctg gtc cca gcc agc tat gca gat ggc gtg tac cag ccc ttg 547
Gln Arg Leu Val Pro Ala Ser Tyr Ala Asp Gly Val Tyr Gln Pro Leu
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gga gaa ccc cac ctg ccc aac ccc cga gac ctt agc aac acc atc tca 595
Gly Glu Pro His Leu Pro Asn Pro Arg Asp Leu Ser Asn Thr Ile Ser
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agg ggc cct gca ggg ctg gcc tcc ctg aga aac cgc aca gtg ttg ggg 643
Arg Gly Pro Ala Gly Leu Ala Ser Leu Arg Asn Arg Thr Val Leu Gly
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gtc ttc ttt ggc tat cac gtg ctt tca gac ctg gtg agc gtg gaa act 691
Val Phe Phe Gly Tyr His Val Leu Ser Asp Leu Val Ser Val Glu Thr
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Pro Gly Cys Pro Ala Glu Phe Leu Asn Ile Arg Ile Pro Pro Gly Asp
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Pro Met Phe Asp Pro Asp Gln Arg Gly Asp Val Val Leu Pro Phe Gln
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	165					170				175						
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Gly	Ser	Ser	His	Ser	Trp	Ser	Asp	Ala	Leu	Arg	Ser	Phe	Ser	Arg	Gly	
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Gln	Leu	Ala	Ser	Gly	Pro	Asp	Pro	Ala	Phe	Pro	Arg	Asp	Ser	Gln	Asn	
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ccc	ctg	etc	atg	tgg	gcg	gcg	ccc	gac	ccc	gcc	acc	ggg	cag	aac	ggg	1027
Pro	Leu	Leu	Met	Trp	Ala	Ala	Pro	Asp	Pro	Ala	Thr	Gly	Gln	Asn	Gly	
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Pro	Arg	Gly	Leu	Tyr	Ala	Phe	Gly	Ala	Glu	Arg	Gly	Asn	Arg	Glu	Pro	
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Phe	Leu	Gln	Ala	Leu	Gly	Leu	Leu	Trp	Phe	Arg	Tyr	His	Asn	Leu	Trp	
	245					250					255					
gcg	cag	agg	ctg	gcc	cgc	cag	cac	cca	gac	tgg	gag	gac	gag	gag	ctg	1171
Ala	Gln	Arg	Leu	Ala	Arg	Gln	His	Pro	Asp	Trp	Glu	Asp	Glu	Glu	Leu	
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Phe	Gln	His	Ala	Arg	Lys	Arg	Val	Ile	Ala	Thr	Tyr	Gln	Asn	Ile	Ala	
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gtg	tat	gag	tgg	ctg	ccc	agc	ttc	ctg	cag	aaa	aca	ctc	ccg	gag	tat	1267
Val	Tyr	Glu	Trp	Leu	Pro	Ser	Phe	Leu	Gln	Lys	Thr	Leu	Pro	Glu	Tyr	
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Thr	Gly	Tyr	Arg	Pro	Phe	Leu	Asp	Pro	Ser	Ile	Ser	Ser	Glu	Phe	Val	
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gcg	gcc	tct	gag	cag	ttc	ctg	tcc	acc	atg	gtg	ccc	cct	ggc	gtc	tac	1363
Ala	Ala	Ser	Glu	Gln	Phe	Leu	Ser	Thr	Met	Val	Pro	Pro	Gly	Val	Tyr	
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Met	Arg	Asn	Ala	Ser	Cys	His	Phe	Gln	Gly	Val	Ile	Asn	Arg	Asn	Ser	
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agt	gtc	tcc	aga	gct	ctc	cgg	gtc	tgc	aac	agc	tac	tgg	agc	cgt	gag	1459
Ser	Val	Ser	Arg	Ala	Leu	Arg	Val	Cys	Asn	Ser	Tyr	Trp	Ser	Arg	Glu	
				360					365					370		

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His Pro Ser Leu Gln Ser Ala Glu Asp Val Asp Ala Leu Leu Leu Gly	
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atg gcc tcc cag atc gca gag cga gag gac cat gtg ttg gtt gaa gat	1555
Met Ala Ser Gln Ile Ala Glu Arg Glu Asp His Val Leu Val Glu Asp	
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gtg cgg gat ttc tgg cct ggg cca ctg aag ttt tcc cgc aca gac cac	1603
Val Arg Asp Phe Trp Pro Gly Pro Leu Lys Phe Ser Arg Thr Asp His	
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ctg gcc agc tgc ctg cag cgg ggc cgg gat ctg ggc ctg ccc tct tac	1651
Leu Ala Ser Cys Leu Gln Arg Gly Arg Asp Leu Gly Leu Pro Ser Tyr	
420 425 430 435	
acc aag gcc agg gca gca ctg ggc ttg tct ccc att acc cgc tgg cag	1699
Thr Lys Ala Arg Ala Ala Leu Gly Leu Ser Pro Ile Thr Arg Trp Gln	
440 445 450	
gac atc aac cct gca ctc tcc cgg agc aat gac act gta ctg gag gcc	1747
Asp Ile Asn Pro Ala Leu Ser Arg Ser Asn Asp Thr Val Leu Glu Ala	
455 460 465	
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Thr Ala Ala Leu Tyr Asn Gln Asp Leu Ser Trp Leu Glu Leu Leu Pro	
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ggg gga ctc ctg gag agc cac cgg gac cct gga cct ctg ttc agc acc	1843
Gly Gly Leu Leu Glu Ser His Arg Asp Pro Gly Pro Leu Phe Ser Thr	
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Ile Val Leu Glu Gln Phe Val Arg Leu Arg Asp Gly Asp Arg Tyr Trp	
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Phe Glu Asn Thr Arg Asn Gly Leu Phe Ser Lys Lys Glu Ile Glu Glu	
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Ile Arg Asn Thr Thr Leu Gln Asp Val Leu Val Ala Val Ile Asn Ile	
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gac ccc agt gct ctg cag ccc aat gtc ttt gtc tgg cat aaa gga gac	2035
Asp Pro Ser Ala Leu Gln Pro Asn Val Phe Val Trp His Lys Gly Asp	
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ccc tgt ccg cag ccg aga cag ctc agc act gaa ggc ctg cca gcg tgt	2083
Pro Cys Pro Gln Pro Arg Gln Leu Ser Thr Glu Gly Leu Pro Ala Cys	
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Ala	Pro	Ser	Val	Val	Arg	Asp	Tyr	Phe	Glu	Gly	Ser	Gly	Phe	Gly	Phe	
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Gly	Val	Thr	Ile	Gly	Thr	Leu	Cys	Cys	Phe	Pro	Leu	Val	Ser	Leu	Leu	
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agt	gcc	tgg	att	gtt	gcc	cgg	ctc	cgg	atg	aga	aat	ttc	aag	agg	ctc	2227
Ser	Ala	Trp	Ile	Val	Ala	Arg	Leu	Arg	Met	Arg	Asn	Phe	Lys	Arg	Leu	
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cag	ggc	cag	gac	cgc	cag	agc	atc	gtg	tct	gag	aag	ctc	gtg	gga	ggc	2275
Gln	Gly	Gln	Asp	Arg	Gln	Ser	Ile	Val	Ser	Glu	Lys	Leu	Val	Gly	Gly	
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Met	Glu	Ala	Leu	Glu	Trp	Gln	Gly	His	Lys	Glu	Pro	Cys	Arg	Pro	Val	
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ctt	gtg	tac	ctg	cag	ccc	ggg	cag	atc	cgt	gtg	gta	gat	ggc	agg	ctc	2371
Leu	Val	Tyr	Leu	Gln	Pro	Gly	Gln	Ile	Arg	Val	Val	Asp	Gly	Arg	Leu	
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acc	gtg	ctc	cgc	acc	atc	cag	ctg	cag	cct	cca	cag	aag	gtc	aac	ttc	2419
Thr	Val	Leu	Arg	Thr	Ile	Gln	Leu	Gln	Pro	Pro	Gln	Lys	Val	Asn	Phe	
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gtc	ctg	tcc	agc	aac	cgt	gga	cgc	cgc	act	ctg	ctg	ctc	aag	atc	ccc	2467
Val	Leu	Ser	Ser	Asn	Arg	Gly	Arg	Arg	Thr	Leu	Leu	Leu	Lys	Ile	Pro	
			695				700						705			
aag	gag	tat	gac	ctg	gtg	ctg	ctg	ttt	aac	ttg	gag	gaa	gag	cgg	cag	2515
Lys	Glu	Tyr	Asp	Leu	Val	Leu	Leu	Phe	Asn	Leu	Glu	Glu	Glu	Arg	Gln	
		710					715					720				
gcg	ctg	gtg	gaa	aat	ctc	cgg	gga	gct	ctg	aag	gag	agc	ggg	ttg	agc	2563
Ala	Leu	Val	Glu	Asn	Leu	Arg	Gly	Ala	Leu	Lys	Glu	Ser	Gly	Leu	Ser	
	725					730					735					
atc	cag	gag	tgg	gag	ctg	cgg	gag	cag	gag	ctg	atg	aga	gca	gct	gtg	2611
Ile	Gln	Glu	Trp	Glu	Leu	Arg	Glu	Gln	Glu	Leu	Met	Arg	Ala	Ala	Val	
740					745				750						755	
aca	cgg	gag	cag	cgg	agg	cac	ctc	ctg	gag	acc	ttt	ttc	agg	cac	ctt	2659
Thr	Arg	Glu	Gln	Arg	Arg	His	Leu	Leu	Glu	Thr	Phe	Phe	Arg	His	Leu	
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ttc	tcc	cag	gtg	ctg	gac	atc	aac	cag	gcc	gac	gca	ggg	acc	ctg	ccc	2707
Phe	Ser	Gln	Val	Leu	Asp	Ile	Asn	Gln	Ala	Asp	Ala	Gly	Thr	Leu	Pro	
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ctg	gac	tcc	tcc	cag	aag	gtg	cgg	gag	gcc	ctg	acc	tgt	gag	ctg	agc	2755
Leu	Asp	Ser	Ser	Gln	Lys	Val	Arg	Glu	Ala	Leu	Thr	Cys	Glu	Leu	Ser	
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Arg Ala Glu Phe Ala Glu Ser Leu Gly Leu Lys Pro Gln Asp Met Phe	
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gtg gag tcc atg ttc tct ctg gct gac aag gat ggc aat ggc tac ctg	2851
Val Glu Ser Met Phe Ser Leu Ala Asp Lys Asp Gly Asn Gly Tyr Leu	
820 825 830 835	
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Ser Phe Arg Glu Phe Leu Asp Ile Leu Val Val Phe Met Lys Gly Ser	
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Pro Glu Glu Lys Ser Arg Leu Met Phe Arg Met Tyr Asp Phe Asp Gly	
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Asn Gly Leu Ile Ser Lys Asp Glu Phe Ile Arg Met Leu Arg Ser Phe	
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Ile Glu Ile Ser Asn Asn Cys Leu Ser Lys Ala Gln Leu Ala Glu Val	
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Val Glu Ser Met Phe Arg Glu Ser Gly Phe Gln Asp Lys Glu Glu Leu	
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Thr Trp Glu Asp Phe His Phe Met Leu Arg Asp His Asn Ser Glu Leu	
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Glu Leu Thr Pro Gln Arg Leu Gln Cys Pro Met Asp Thr Asp Pro Pro	
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Gln Glu Ile Arg Arg Arg Phe Gly Lys Lys Val Thr Ser Phe Gln	
1000 1005 1010	
ccc ttg ctg ttc act gag gcg cac cga gag aag ttc caa cgc agc	3421

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tgt	ctc	cac	cag	acg	gtg	caa	cag	ttc	aag	cgc	ttc	att	gag	aac	3466
Cys	Leu	His	Gln	Thr	Val	Gln	Gln	Phe	Lys	Arg	Phe	Ile	Glu	Asn	
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Tyr	Arg	Arg	His	Ile	Gly	Cys	Val	Ala	Val	Phe	Tyr	Ala	Ile	Ala	
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ggg	ggg	ctt	ttc	ctg	gag	agg	gcc	tac	tac	tac	gcc	ttt	gcc	gca	3556
Gly	Gly	Leu	Phe	Leu	Glu	Arg	Ala	Tyr	Tyr	Tyr	Ala	Phe	Ala	Ala	
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His	His	Thr	Gly	Ile	Thr	Asp	Thr	Thr	Arg	Val	Gly	Ile	Ile	Leu	
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Ser	Arg	Gly	Thr	Ala	Ala	Ser	Ile	Ser	Phe	Met	Phe	Ser	Tyr	Ile	
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Leu	Leu	Thr	Met	Cys	Arg	Asn	Leu	Ile	Thr	Phe	Leu	Arg	Glu	Thr	
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Phe	Leu	Asn	Arg	Tyr	Val	Pro	Phe	Asp	Ala	Ala	Val	Asp	Phe	His	
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cgc	ctc	att	gcc	tcc	acc	gcc	atc	gtc	ctc	aca	gtc	tta	cac	agt	3781
Arg	Leu	Ile	Ala	Ser	Thr	Ala	Ile	Val	Leu	Thr	Val	Leu	His	Ser	
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Val	Gly	His	Val	Val	Asn	Val	Tyr	Leu	Phe	Ser	Ile	Ser	Pro	Leu	
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Ser	Val	Leu	Ser	Cys	Leu	Phe	Pro	Gly	Leu	Phe	His	Asp	Asp	Gly	
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Ser	Glu	Leu	Pro	Gln	Lys	Tyr	Tyr	Trp	Trp	Phe	Phe	Gln	Thr	Val	
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cca	ggc	ctc	acg	ggg	gtt	gtg	ctg	ctc	ctg	atc	ctg	gcc	atc	atg	3961
Pro	Gly	Leu	Thr	Gly	Val	Val	Leu	Leu	Leu	Ile	Leu	Ala	Ile	Met	
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tat	gtc	ttt	gcc	tcc	cac	cac	ttc	cgc	cgc	cgc	agt	ttc	cgg	ggc	4006
Tyr	Val	Phe	Ala	Ser	His	His	Phe	Arg	Arg	Arg	Ser	Phe	Arg	Gly	
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Phe Trp Leu Thr His	His Leu Tyr Ile Leu	Leu Tyr Val Leu Leu	
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Ile Phe Phe Leu Val	Pro Ala Ile Ile Tyr	Gly Gly Asp Lys Leu	
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Val Ser Leu Ser Arg	Lys Lys Val Glu Ile	Ser Val Val Lys Ala	
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Glu Leu Leu Pro Ser	Gly Val Thr His Leu	Arg Phe Gln Arg Pro	
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Gln Gly Phe Glu Tyr	Lys Ser Gly Gln Trp	Val Arg Ile Ala Cys	
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Leu Ala Leu Gly Thr	Thr Glu Tyr His Pro	Phe Thr Leu Thr Ser	
1315	1320	1325	
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Ala Pro His Glu Asp	Thr Leu Ser Leu His	Ile Arg Ala Ala Gly	
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ccc tgg acc act cgc	ctc agg gag atc tac	tca gcc ccg acg ggt	4411
Pro Trp Thr Thr Arg	Leu Arg Glu Ile Tyr	Ser Ala Pro Thr Gly	
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Gly Glu Gly His Gln	Glu Trp His Lys Phe	Glu Val Ser Val Leu	
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Val Gly Gly Gly Ile	Gly Val Thr Pro Phe	Ala Ser Ile Leu Lys	
1390	1395	1400	
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Asp Leu Val Phe Lys	Ser Ser Val Ser Cys	Gln Val Phe Cys Lys	
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Lys Ile Tyr Phe Ile Trp Val Thr Arg Thr Gln Arg Gln Phe Glu	
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Gln Lys Val Leu Asn Arg Ser Leu Phe Thr Gly Leu Arg Ser Ile	
1480 1485 1490	
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Thr His Phe Gly Arg Pro Pro Phe Glu Pro Phe Phe Asn Ser Leu	
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Gly Pro Pro Gly Met Thr Lys Asn Val Glu Lys Ala Cys Gln Leu	
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Thr Pro Leu Gly Ala Gln Asn Pro Ile Ser Trp Glu Val Gln Arg Phe
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Asp Gly Trp Tyr Asn Asn Leu Met Glu His Arg Trp Gly Ser Lys Gly
 35 40 45

Ser Arg Leu Gln Arg Leu Val Pro Ala Ser Tyr Ala Asp Gly Val Tyr
 50 55 60

Gln Pro Leu Gly Glu Pro His Leu Pro Asn Pro Arg Asp Leu Ser Asn
 65 70 75 80

Thr Ile Ser Arg Gly Pro Ala Gly Leu Ala Ser Leu Arg Asn Arg Thr
 85 90 95

Val Leu Gly Val Phe Phe Gly Tyr His Val Leu Ser Asp Leu Val Ser
 100 105 110

Val Glu Thr Pro Gly Cys Pro Ala Glu Phe Leu Asn Ile Arg Ile Pro
 115 120 125

Pro Gly Asp Pro Met Phe Asp Pro Asp Gln Arg Gly Asp Val Val Leu
 130 135 140

Pro Phe Gln Arg Ser Arg Trp Asp Pro Glu Thr Gly Arg Ser Pro Ser
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Asn Pro Arg Asp Pro Ala Asn Gln Val Thr Gly Trp Leu Asp Gly Ser
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Ala Ile Tyr Gly Ser Ser His Ser Trp Ser Asp Ala Leu Arg Ser Phe
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Ser Arg Gly Gln Leu Ala Ser Gly Pro Asp Pro Ala Phe Pro Arg Asp
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Ser Gln Asn Pro Leu Leu Met Trp Ala Ala Pro Asp Pro Ala Thr Gly
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Gln Asn Gly Pro Arg Gly Leu Tyr Ala Phe Gly Ala Glu Arg Gly Asn
225 230 235 240

Arg Glu Pro Phe Leu Gln Ala Leu Gly Leu Leu Trp Phe Arg Tyr His
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Asn Leu Trp Ala Gln Arg Leu Ala Arg Gln His Pro Asp Trp Glu Asp
260 265 270

Glu Glu Leu Phe Gln His Ala Arg Lys Arg Val Ile Ala Thr Tyr Gln
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Asn Ile Ala Val Tyr Glu Trp Leu Pro Ser Phe Leu Gln Lys Thr Leu
290 295 300

Pro Glu Tyr Thr Gly Tyr Arg Pro Phe Leu Asp Pro Ser Ile Ser Ser
305 310 315 320

Glu Phe Val Ala Ala Ser Glu Gln Phe Leu Ser Thr Met Val Pro Pro
325 330 335

Gly Val Tyr Met Arg Asn Ala Ser Cys His Phe Gln Gly Val Ile Asn
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Arg Asn Ser Ser Val Ser Arg Ala Leu Arg Val Cys Asn Ser Tyr Trp
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Ser Arg Glu His Pro Ser Leu Gln Ser Ala Glu Asp Val Asp Ala Leu
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Leu Leu Gly Met Ala Ser Gln Ile Ala Glu Arg Glu Asp His Val Leu
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Val Glu Asp Val Arg Asp Phe Trp Pro Gly Pro Leu Lys Phe Ser Arg
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Thr Asp His Leu Ala Ser Cys Leu Gln Arg Gly Arg Asp Leu Gly Leu
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Pro Ser Tyr Thr Lys Ala Arg Ala Ala Leu Gly Leu Ser Pro Ile Thr
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Arg Trp Gln Asp Ile Asn Pro Ala Leu Ser Arg Ser Asn Asp Thr Val
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Leu Glu Ala Thr Ala Ala Leu Tyr Asn Gln Asp Leu Ser Trp Leu Glu
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Leu Leu Pro Gly Gly Leu Leu Glu Ser His Arg Asp Pro Gly Pro Leu
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Phe Ser Thr Ile Val Leu Glu Gln Phe Val Arg Leu Arg Asp Gly Asp
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Arg Tyr Trp Phe Glu Asn Thr Arg Asn Gly Leu Phe Ser Lys Lys Glu
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Ile Glu Glu Ile Arg Asn Thr Thr Leu Gln Asp Val Leu Val Ala Val
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Ser Leu Leu Ser Ala Trp Ile Val Ala Arg Leu Arg Met Arg Asn Phe
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Val Gly Gly Met Glu Ala Leu Glu Trp Gln Gly His Lys Glu Pro Cys
 645 650 655

Arg Pro Val Leu Val Tyr Leu Gln Pro Gly Gln Ile Arg Val Val Asp
 660 665 670

Gly Arg Leu Thr Val Leu Arg Thr Ile Gln Leu Gln Pro Pro Gln Lys
 675 680 685

Val Asn Phe Val Leu Ser Ser Asn Arg Gly Arg Arg Thr Leu Leu Leu
 690 695 700

Lys Ile Pro Lys Glu Tyr Asp Leu Val Leu Leu Phe Asn Leu Glu Glu
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Phe Asp Gly Asn Gly Leu Ile Ser Lys Asp Glu Phe Ile Arg Met Leu
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Arg Ser Phe Ile Glu Ile Ser Asn Asn Cys Leu Ser Lys Ala Gln Leu
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Ile Leu Ser Arg Gly Thr Ala Ala Ser Ile Ser Phe Met Phe Ser
1085 1090 1095

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		1350					1355					1360			
ctt	gat	gga	ccg	ttt	gga	gag	ggc	cat	cag	gag	tgg	cat	aaa	ttt	4334
Leu	Asp	Gly	Pro	Phe	Gly	Glu	Gly	His	Gln	Glu	Trp	His	Lys	Phe	
		1365					1370					1375			
gag	gtg	tca	gtg	ttg	gtg	gga	ggg	ggc	att	ggg	gtc	acc	ccc	ttt	4379
Glu	Val	Ser	Val	Leu	Val	Gly	Gly	Gly	Ile	Gly	Val	Thr	Pro	Phe	
		1380					1385					1390			
gcc	tcc	atc	ctc	aaa	gac	ctg	gtc	ttc	aag	tca	tcc	ttg	ggc	agc	4424
Ala	Ser	Ile	Leu	Lys	Asp	Leu	Val	Phe	Lys	Ser	Ser	Leu	Gly	Ser	
		1395					1400					1405			
caa	atg	ctg	tgt	aag	aag	atc	tac	ttc	atc	tgg	gtg	aca	cgg	acc	4469
Gln	Met	Leu	Cys	Lys	Lys	Ile	Tyr	Phe	Ile	Trp	Val	Thr	Arg	Thr	
		1410					1415					1420			

cag cgt cag	ttt gag tgg ctg gct	gac atc atc caa gag	gtg gag	4514		
Gln Arg Gln	Phe Glu Trp Leu Ala	Asp Ile Ile Gln Glu	Val Glu			
1425	1430	1435				
gag aac gac	cac cag gac ctg gtg	tct gtg cac att tat	gtc acc	4559		
Glu Asn Asp	His Gln Asp Leu Val	Ser Val His Ile Tyr	Val Thr			
1440	1445	1450				
cag ctg gct	gag aag ttc gac ctc	agg acc acc atg cta	tac atc	4604		
Gln Leu Ala	Glu Lys Phe Asp Leu	Arg Thr Thr Met Leu	Tyr Ile			
1455	1460	1465				
tgc gag cgg	cac ttc cag aaa gtg	ctg aac cgg agt ctg	ttc acg	4649		
Cys Glu Arg	His Phe Gln Lys Val	Leu Asn Arg Ser Leu	Phe Thr			
1470	1475	1480				
ggc ctg cgc	tcc atc acc cac ttt	ggc cgt ccc ccc ttc	gag ccc	4694		
Gly Leu Arg	Ser Ile Thr His Phe	Gly Arg Pro Pro Phe	Glu Pro			
1485	1490	1495				
ttc ttc aac	tcc ctg cag gag gtc	cac cca cag gtg cgc	aag atc	4739		
Phe Phe Asn	Ser Leu Gln Glu Val	His Pro Gln Val Arg	Lys Ile			
1500	1505	1510				
ggg gtg ttc	agc tgc ggc cct cca	gga atg acc aag aat	gta gag	4784		
Gly Val Phe	Ser Cys Gly Pro Pro	Gly Met Thr Lys Asn	Val Glu			
1515	1520	1525				
aag gcc tgt	cag ctc gtc aac agg	cag gac cga gcc cac	ttc atg	4829		
Lys Ala Cys	Gln Leu Val Asn Arg	Gln Asp Arg Ala His	Phe Met			
1530	1535	1540				
cac cac tat	gag aac ttc tga	gcctgtctc cctggctgct	gcttcagta	4880		
His His Tyr	Glu Asn Phe					
1545						
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 agtttgttta ttctctgtt gatggacgtt tgggttggtt ctaattttga atgattataa 6320
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<212> PRT

<213> Homo sapiens

<400> 14

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 20 25 30

Trp Glu Val Gln Arg Tyr Asp Gly Trp Phe Asn Asn Leu Arg His His
 35 40 45

Glu Arg Gly Ala Val Gly Cys Arg Leu Gln Arg Arg Val Pro Ala Asn
 50 55 60

Tyr Ala Asp Gly Val Tyr Gln Ala Leu Glu Glu Pro Gln Leu Pro Asn
 65 70 75 80

Pro Arg Arg Leu Ser Asn Ala Ala Thr Arg Gly Ile Ala Gly Leu Pro
 85 90 95

Ser Leu His Asn Arg Thr Val Leu Gly Val Phe Phe Gly Tyr His Val
 100 105 110

Leu Ser Asp Val Val Ser Val Glu Thr Pro Gly Cys Pro Ala Glu Phe
 115 120 125

Leu Asn Ile Arg Ile Pro Pro Gly Asp Pro Val Phe Asp Pro Asp Gln
 130 135 140

Arg Gly Asp Val Val Leu Pro Phe Gln Arg Ser Arg Trp Asp Pro Glu
 145 150 155 160

Thr Gly Arg Ser Pro Ser Asn Pro Arg Asp Leu Ala Asn Gln Val Thr
 165 170 175

Gly Trp Leu Asp Gly Ser Ala Ile Tyr Gly Ser Ser His Ser Trp Ser
 180 185 190

Asp Ala Leu Arg Ser Phe Ser Gly Gly Gln Leu Ala Ser Gly Pro Asp
 195 200 205

Pro Ala Phe Pro Arg Asp Ser Gln Asn Pro Leu Leu Met Trp Ala Ala
 210 215 220

Pro Asp Pro Ala Thr Gly Gln Asn Gly Pro Arg Gly Leu Tyr Ala Phe
 225 230 235 240

Gly Ala Glu Arg Gly Asn Arg Glu Pro Phe Leu Gln Ala Leu Gly Leu
 245 250 255

Leu Trp Phe Arg Tyr His Asn Leu Trp Ala Gln Arg Leu Ala Arg Gln
 260 265 270

His Pro Asp Trp Glu Asp Glu Glu Leu Phe Gln His Ala Arg Lys Arg
 275 280 285

Val Ile Ala Thr Tyr Gln Asn Ile Ala Val Tyr Glu Trp Leu Pro Ser
 290 295 300

Phe Leu Gln Lys Thr Leu Pro Glu Tyr Thr Gly Tyr Arg Pro Phe Leu
 305 310 315 320

Asp Pro Ser Ile Ser Pro Glu Phe Val Val Ala Ser Glu Gln Phe Phe
 325 330 335

Ser Thr Met Val Pro Pro Gly Val Tyr Met Arg Asn Ala Ser Cys His
 340 345 350

Phe Arg Lys Val Leu Asn Lys Gly Phe Gln Ser Ser Gln Ala Leu Arg
 355 360 365

Val Cys Asn Asn Tyr Trp Ile Arg Glu Asn Pro Asn Leu Asn Ser Thr
 370 375 380

Gln Glu Val Asn Glu Leu Leu Gly Met Ala Ser Gln Ile Ser Glu
 385 390 395 400

Leu Glu Asp Asn Ile Val Val Glu Asp Leu Arg Asp Tyr Trp Pro Gly
 405 410 415

Pro Gly Lys Phe Ser Arg Thr Asp Tyr Val Ala Ser Ser Ile Gln Arg
 420 425 430

Gly Arg Asp Met Gly Leu Pro Ser Tyr Ser Gln Ala Leu Leu Ala Phe
 435 440 445

Gly Leu Asp Ile Pro Arg Asn Trp Ser Asp Leu Asn Pro Asn Val Asp
 450 455 460

Pro Gln Val Leu Glu Ala Thr Ala Ala Leu Tyr Asn Gln Asp Leu Ser
465 470 475 480

Gln Leu Glu Leu Leu Leu Gly Gly Leu Leu Glu Ser His Gly Asp Pro
485 490 495

Gly Pro Leu Phe Ser Ala Ile Val Leu Asp Gln Phe Val Arg Leu Arg
500 505 510

Asp Gly Asp Arg Tyr Trp Phe Glu Asn Thr Arg Asn Gly Leu Phe Ser
515 520 525

Lys Lys Glu Ile Glu Asp Ile Arg Asn Thr Thr Leu Arg Asp Val Leu
530 535 540

Val Ala Val Ile Asn Ile Asp Pro Ser Ala Leu Gln Pro Asn Val Phe
545 550 555 560

Val Trp His Lys Gly Ala Pro Cys Pro Gln Pro Lys Gln Leu Thr Thr
565 570 575

Asp Gly Leu Pro Gln Cys Ala Pro Leu Thr Val Leu Asp Phe Phe Glu
580 585 590

Gly Ser Ser Pro Gly Phe Ala Ile Thr Ile Ile Ala Leu Cys Cys Leu
595 600 605

Pro Leu Val Ser Leu Leu Leu Ser Gly Val Val Ala Tyr Phe Arg Gly
610 615 620

Arg Glu His Lys Lys Leu Gln Lys Lys Leu Lys Glu Ser Val Lys Lys
625 630 635 640

Glu Ala Ala Lys Asp Gly Val Pro Ala Met Glu Trp Pro Gly Pro Lys
645 650 655

Glu Arg Ser Ser Pro Ile Ile Ile Gln Leu Leu Ser Asp Arg Cys Leu
660 665 670

Gln Val Leu Asn Arg His Leu Thr Val Leu Arg Val Val Gln Leu Gln
675 680 685

Pro Leu Gln Gln Val Asn Leu Ile Leu Ser Asn Asn Arg Gly Cys Arg
690 695 700

Thr Leu Leu Leu Lys Ile Pro Lys Glu Tyr Asp Leu Val Leu Leu Phe
705 710 715 720

Ser Ser Glu Glu Glu Arg Gly Ala Phe Val Gln Gln Leu Trp Asp Phe
725 730 735

Cys Val Arg Trp Ala Leu Gly Leu His Val Ala Glu Met Ser Glu Lys
740 745 750

Glu Leu Phe Arg Lys Ala Val Thr Lys Gln Gln Arg Glu Arg Ile Leu
755 760 765

Glu Ile Phe Phe Arg His Leu Phe Ala Gln Val Leu Asp Ile Asn Gln
770 775 780

Ala Asp Ala Gly Thr Leu Pro Leu Asp Ser Ser Gln Lys Val Arg Glu
785 790 795 800

Ala Leu Thr Cys Glu Leu Ser Arg Ala Glu Phe Ala Glu Ser Leu Gly
805 810 815

Leu Lys Pro Gln Asp Met Phe Val Glu Ser Met Phe Ser Leu Ala Asp
820 825 830

Lys Asp Gly Asn Gly Tyr Leu Ser Phe Arg Glu Phe Leu Asp Ile Leu
835 840 845

Val Val Phe Met Lys Gly Ser Pro Glu Asp Lys Ser Arg Leu Met Phe
850 855 860

Thr Met Tyr Asp Leu Asp Glu Asn Gly Phe Leu Ser Lys Asp Glu Phe
865 870 875 880

Phe Thr Met Met Arg Ser Phe Ile Glu Ile Ser Asn Asn Cys Leu Ser
885 890 895

Lys Ala Gln Leu Ala Glu Val Val Glu Ser Met Phe Arg Glu Ser Gly
 900 905 910

Phe Gln Asp Lys Glu Glu Leu Thr Trp Glu Asp Phe His Phe Met Leu
 915 920 925

Arg Asp His Asp Ser Glu Leu Arg Phe Thr Gln Leu Cys Val Lys Gly
 930 935 940

Gly Gly Gly Gly Gly Asn Gly Ile Arg Asp Ile Phe Lys Gln Asn Ile
 945 950 955 960

Ser Cys Arg Val Ser Phe Ile Thr Arg Thr Pro Gly Glu Arg Ser His
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Pro Gln Gly Leu Gly Pro Pro Ala Pro Glu Ala Pro Glu Leu Gly Gly
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Pro Gly Leu Lys Lys Arg Phe Gly Lys Lys Ala Ala Val Pro Thr Pro
 995 1000 1005

Arg Leu Tyr Thr Glu Ala Leu Gln Glu Lys Met Gln Arg Gly Phe
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Leu Ala Gln Lys Leu Gln Gln Tyr Lys Arg Phe Val Glu Asn Tyr
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Arg Arg His Ile Val Cys Val Ala Ile Phe Ser Ala Ile Cys Val
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Gly Val Phe Ala Asp Arg Ala Tyr Tyr Tyr Gly Phe Ala Ser Pro
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Pro Ser Asp Ile Ala Gln Thr Thr Leu Val Gly Ile Ile Leu Ser
 1070 1075 1080

Arg Gly Thr Ala Ala Ser Val Ser Phe Met Phe Ser Tyr Ile Leu
 1085 1090 1095

Leu Thr Met Cys Arg Asn Leu Ile Thr Phe Leu Arg Glu Thr Phe
 1100 1105 1110

Leu Asn Arg Tyr Val Pro Phe Asp Ala Ala Val Asp Phe His Arg
 1115 1120 1125

Trp Ile Ala Met Ala Ala Val Val Leu Ala Ile Leu His Ser Ala
 1130 1135 1140

Gly His Ala Val Asn Val Tyr Ile Phe Ser Val Ser Pro Leu Ser
 1145 1150 1155

Leu Leu Ala Cys Ile Phe Pro Asn Val Phe Val Asn Asp Gly Ser
 1160 1165 1170

Lys Leu Pro Gln Lys Phe Tyr Trp Trp Phe Phe Gln Thr Val Pro
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Gly Met Thr Gly Val Leu Leu Leu Leu Val Leu Ala Ile Met Tyr
 1190 1195 1200

Val Phe Ala Ser His His Phe Arg Arg Arg Ser Phe Arg Gly Phe
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Trp Leu Thr His His Leu Tyr Ile Leu Leu Tyr Ala Leu Leu Ile
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Ile His Gly Ser Tyr Ala Leu Ile Gln Leu Pro Thr Phe His Ile
 1235 1240 1245

Tyr Phe Leu Val Pro Ala Ile Ile Tyr Gly Gly Asp Lys Leu Val
 1250 1255 1260

Ser Leu Ser Arg Lys Lys Val Glu Ile Ser Val Val Lys Ala Glu
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Leu Leu Pro Ser Gly Val Thr Tyr Leu Gln Phe Gln Arg Pro Gln
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Gly Phe Glu Tyr Lys Ser Gly Gln Trp Val Arg Ile Ala Cys Leu
 1295 1300 1305

Ala Leu Gly Thr Thr Glu Tyr His Pro Phe Thr Leu Thr Ser Ala
1310 1315 1320

Pro His Glu Asp Thr Leu Ser Leu His Ile Arg Ala Val Gly Pro
1325 1330 1335

Trp Thr Thr Arg Leu Arg Glu Ile Tyr Ser Ser Pro Lys Gly Asn
1340 1345 1350

Gly Cys Ala Gly Tyr Pro Lys Leu Tyr Leu Asp Gly Pro Phe Gly
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Glu Gly His Gln Glu Trp His Lys Phe Glu Val Ser Val Leu Val
1370 1375 1380

Gly Gly Gly Ile Gly Val Thr Pro Phe Ala Ser Ile Leu Lys Asp
1385 1390 1395

Leu Val Phe Lys Ser Ser Leu Gly Ser Gln Met Leu Cys Lys Lys
1400 1405 1410

Ile Tyr Phe Ile Trp Val Thr Arg Thr Gln Arg Gln Phe Glu Trp
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Leu Ala Asp Ile Ile Gln Glu Val Glu Glu Asn Asp His Gln Asp
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Leu Val Ser Val His Ile Tyr Val Thr Gln Leu Ala Glu Lys Phe
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Asp Leu Arg Thr Thr Met Leu Tyr Ile Cys Glu Arg His Phe Gln
1460 1465 1470

Lys Val Leu Asn Arg Ser Leu Phe Thr Gly Leu Arg Ser Ile Thr
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His Phe Gly Arg Pro Pro Phe Glu Pro Phe Phe Asn Ser Leu Gln
1490 1495 1500

Glu Val His Pro Gln Val Arg Lys Ile Gly Val Phe Ser Cys Gly
1505 1510 1515

Pro Pro Gly Met Thr Lys Asn Val Glu Lys Ala Cys Gln Leu Val
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Asn Arg Gln Asp Arg Ala His Phe Met His His Tyr Glu Asn Phe
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 acagccagtg aggatgtttt ccagtatgaa gtggctgtgc tggttggagc aggaattggg 360
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 aacctcaaaa caaaaaagat ctatttctac tggatctgca gggagacagg tgccttttcc 480
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 ttaaactttg acaaggccac tgacatcgtg acaggtctga aacagaaaac ctcccttggg 660
 agaccaatgt gggacaatga gttttctaca atagctacct cccaccccaa gtctgtagtg 720
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<213> Artificial Sequence

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<223> Synthetic primer

<400> 19

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23